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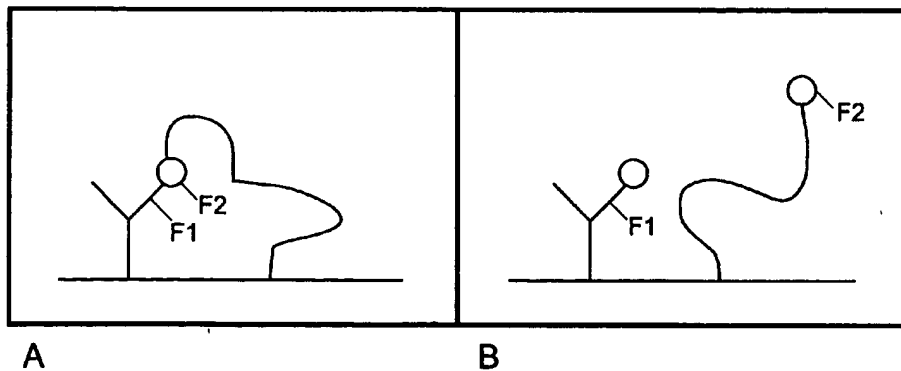
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(57) Abstract: Methods for sensing test stimuli using arrays of biopolymers are provided. Libraries of biopolymers, such nucleic acid variants, and expression products encoded by nucleic acid variants are provided. Reusable library arrays, and methods for their use are provided.

INTERNATIONAL SEARCH REPORT

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 GO1N C07K C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 949 269 A (SYMBIOSIS GMBH) 13 October 1999 (1999-10-13) abstract figure 1 example 1 claims 1-7	67-69, 73,74
X	WO 98 27104 A (UNIV YALE ;BREAKER RONALD R (US)) 25 June 1998 (1998-06-25) abstract --- -/--	38,73,74

☒ Further documents are listed in the continuation of box C.

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>MIYAWAKI A ET AL: "FLUORESCENT INDICATORS FOR CA²⁺ BASED ON GREEN FLUORESCENT PROTEINS AND CALMODULIN" NATURE, MACMILLAN JOURNALS LTD. LONDON, GB, vol. 388, no. 6645, 28 August 1997 (1997-08-28), pages 882-887, XP002058386 ISSN: 0028-0836 abstract figure 1A</p>	1,14,17, 38,52,59
X	<p>MITRA ROBI D ET AL: "Fluorescence resonance energy transfer between blue-emitting and red-shifted excitation derivatives of the green fluorescent protein." GENE (AMSTERDAM), vol. 173, no. 1, 1996, pages 13-17, XP002238134 ISSN: 0378-1119 abstract</p>	25,38,52
A	<p>BAIRD G S ET AL: "Circular permutation and receptor insertion within green fluorescent proteins" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 96, no. 20, 28 September 1999 (1999-09-28), pages 11241-11246, XP002187230 ISSN: 0027-8424 the whole document</p>	1-126
A	<p>TSIEN R Y: "THE GREEN FLUORESCENT PROTEIN" ANNUAL REVIEW OF BIOCHEMISTRY, PALTO ALTO, CA, US, vol. 67, 1998, pages 509-544, XP000946725 ISSN: 0066-4154 the whole document</p>	1-126

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0949269	A	13-10-1999	EP 0949269 A1	13-10-1999
WO 9827104	A	25-06-1998	AU 724627 B2	28-09-2000
			AU 5810798 A	15-07-1998
			EP 0958303 A1	24-11-1999
			JP 2002514913 T	21-05-2002
			WO 9827104 A1	25-06-1998